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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/641,720	08/15/2003	Toshihiro Suzuki	2803.68281	2147

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GREER, BURNS & CRAIN
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EXAMINER

CARIASO, ALAN B

ART UNIT	PAPER NUMBER
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2875

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/641,720

Applicant(s)

SUZUKI ET AL.

Examiner

Alan Cariaso

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-14, 49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-14, 49 and 50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Receipt of applicant's response filed October 19, 2005 is acknowledged. Claims 1-6, 8-14, 49 and 50 are pending. Claims 7 and 15-48 are cancelled. Claims 11 and 13 are amended. Claims 49 and 50 are newly submitted.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5, 8-10, 12, 14 (dependent on claims 1-3, 5, 8-10 and 12) and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by PARKER (US 5,613,751).

4. PARKER a lighting unit (fig.7) comprising a light guide plate (42), a light source (3), and a truncated pyramid (43) arranged between the light guide plate (42) and the light source (3), said truncated pyramid (43) having a base (inner dotted line at periphery of plate 42), a top (outer dotted line adjacent 3) smaller than the base, and a slope extending between said base and said top (fig.7), said light source (3) being arranged in close contact with said top of the truncated pyramid (43), said light guide plate (42) being arranged in close contact with said base (inner dotted line) of the truncated pyramid (43), so that light is propagated from light emitting part of the light source (3) to the light guide plate (42) without passing through any air layer; wherein

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said truncated pyramid (43) and said light guide plate (42) are integrated with each other (col.2, lines 65-66), and the light source (3) is attached (col.3, line 46-48) to the truncated pyramid (43); wherein said light source (3) and said truncated pyramid (43) are integrated with each other (col.3, lines 49-59), and the truncated pyramid (43) is attached (col.3, lines 4-6) to the light guide plate (42); wherein the truncated pyramid (43) inherently has a refractive index and is shown to have an angle (fig.7) between the slope between the slope and a line parallel to an axis (the linear direction of electrodes of light source 3) of the truncated pyramid (43), the slope angle of the pyramid (43) being about 30-45 degrees (observed to be around midpoint of 90 degrees, or acute angles of a right triangle adjacent pyramid 43 shown in fig.7); wherein the light emitting part or surface (square portion) of the light source (3) is smaller than or equal to the top (outer dotted line) of the truncated pyramid (43); further comprising a reflecting member (10, fig.2) placed to at least partially surround the light source (3, col.3, lines 11-25) and the truncated pyramid (6, fig.2); wherein the light source (3) comprises at least one LED (col.7, line 9); and a display element (col.8, lines 56-67); and wherein said top (further including the general area 3, from peripheral dotted lines containing light source (3)) is an outermost peripheral surface (any of the lateral surfaces about sources 3 and surface where the electrodes extend through).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 6 and 14 (dependent on claims 4 and 6) are rejected under 35 U.S.C. 103(a) as being unpatentable over PARKER (US 5,613,751) in view of UNGER et al (US 6,164,789).

7. PARKER discloses the claimed invention including the truncated pyramid (4,6,12,43) having an inherent refractive index and is shown to have a slope angle. However, PARKER does not disclose: the angle (α) of the slope of the truncated pyramid being equal to or greater than arcsine ($1/n$) (claim 4); the truncated pyramid (43) comprising an adhesive member (claim 6).

8. UNGER teaches a tapered coupling waveguide (210, fig.8) loses light when light reaches the tapered walls at less than the critical angle $\theta_c = \sin^{-1}(n_1/n_2)$ (Snell's law, col.4, lines 47-65) where n_1 is refraction index of air (essentially $n_1=1$ for air) and n_2 is the refraction index of the waveguide (210) for the purpose of producing a taper angle that would minimize light loss in guiding light to a second light guide panel or plate (220). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the truncated pyramid of PARKER to include a taper angle that is greater than or equal to the critical angle $\theta_c = \sin^{-1}(n_1/n_2)$ in order to maximize light propagation there within to reach the attached light guide plate.

9. UNGER further teaches an optically transparent adhesion layer (240, fig.8, col.3, lines 62-67) fusing the tapered coupling waveguide (210) to the light guide plate (220), the adhesion layer having an index of refraction substantially equal to that of

waveguides (210,220) for the purpose of maximizing light transfer therebetween. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the separate attached pieces of the light transition pyramid and light emitting panel of PARKER (col.3, lines 4-6) to include the type of adhesion layer between them as taught by UNGER in order to maximize light transfer.

10. Claims 11, 13, 14 (dependent on claims 11 and 13), and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over PARKER (US 5,613,751) in view of TAI et al (US 5,390,276).

11. PARKER discloses the claimed invention including said top (general area 3, from peripheral dotted lines containing light source (3)) is an outermost peripheral surface (any of the lateral surfaces about sources 3 and where the electrodes extend through). However, PARKER does not disclose a light absorbing member located near a border between the light guide plate and the truncated pyramid.

12. TAI '276 teaches light absorbing coating (72, figs. 1-2B, col.7, lines 10-68) on the light collimating pipe (48) near the border (16) between the light guide plate (14) and the transition pipe (48) for the purpose of limiting light reflection of greater than a certain angle θ to internally reflect and collimate light toward the input edge or border (16) of the light guide plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light emitting panel assembly of PARKER to include light absorbing material near the common light guide border as taught by TAI

et al '276 in order to maximize collimated light toward the light guide plate's reflective surface to emerge as collimated backlighting to sectional-specific LCD.

Response to Arguments

13. Applicant's arguments filed October 19, 2005 have been fully considered but they are not persuasive.

14. Applicant alleges that Parker et al. fails to disclose all of the features of the present invention, specifically, inter alia, a "truncated pyramid arranged between the light guide plate and the light source, said truncated pyramid having a base, a top smaller than the base, and a slope extending between said base and said top, said light source being arranged in close contact with *said base (incorrect recitation of claim 1, should instead be "said top")* of the truncated pyramid, *(here, missing an intermediate phrase in claim 1)* so that light is propagated from a light emitting part of the light source to the light guide plate without passing through any air layer" as defined in claim 1, and that in Figure 7 of Parker et al. reference, light sources are not in close contact with the top of a truncated pyramid, but are instead each located within a five-sided polygon transition area 43. Applicant further presents an Appendix of figures, one of which (Figure A) illustrates an example of the invention defined in claim 1, regarding the truncated pyramid and close contact features.

15. In rebuttal, applicant's claims, namely claim 1, are considered or interpreted open-ended and are not limited to just one representation (Fig.A in Appendix) presented by the applicant. Parker adequately discloses all the claimed features including the

truncated pyramid and said light source being arranged in close contact with the said top of the truncated pyramid. Parker's transition area (43) clearly shows at least one truncated pyramid, given that it has an extending slope between base and top demarcated by the dotted lines. The additional portions beyond either demarcating dotted lines that further comprise the transition area with encapsulated light sources (3) or transition area with remaining panel member (41,42), do not preclude the existence of the truncated pyramid, there between the light source(s) and the light guide plate.

16. Furthermore, applicant's specification shows other representation of the invention, where each of at least figures 8, 9 and 10, shows light source 14 attached to the top 16b (pg.18, lines 11-20) or bonded to the top 16b (pg.19, lines 2-5).

Corresponding to applicant's argument, it appears that applicant's disclosed light source is each located within or in close contact of a polygon transition area that has slope.

17. Accordingly, the rejection of claims 1-3, 5, 8-10, 12 and 14 (dependent on claims 1-3, 5, 8-10 and 12) are rejected under 35 U.S.C. 102(b) as being anticipated by PARKER (US 5,613,751) stands. It follows that the rejection of the claims 4, 6, 7 and 14 under 35 USC 103 also stand, as set forth in this action.

18. In regards to newly submitted claims 49 and 50, applicant argues that "the outer dashed line (in Parker et al) is not an "outermost peripheral surface" but is instead an internal area. As set forth in this Office Action, claims 49 and 50 are rejected because the recited "said top is an outermost peripheral surface" is considered to be disclosed by Parker et al. The "top" portion of truncated pyramid or transition area 43 of Parker is not limited to just the outer dashed line through pyramid 43, but also beyond that outer

dashed line that includes the enclosed light sources 3. This general "top" is apparent in illustrating lateral sides around the light sources 3 and back/front side where electrodes protrude, any of which adequately meet the claimed "outermost peripheral surface".

19. In regards to claims 11, 13 and 14 rejected under 35 USC 103 as being unpatentable over Parker et al in view of Tai et al, applicant directs attention to applicant's figures 26 and 27 regarding the light absorbing member 28 "at least partially surrounds a portion of the truncated pyramid(16)", that in contrast, applicant alleges that coating 72 of Figure 2A of Tai et al does not surround a portion of a truncated pyramid, that Tai et al device of figures 1-2B lacks a truncated pyramid-shaped member.

20. In response to applicant's arguments against the references individually at least toward Tai et al, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, the rejection of claims 11, 13 and 14 stands.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

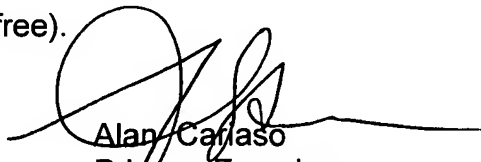
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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Cariaso whose telephone number is (571) 272-2366. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Alan Cariaso
Primary Examiner
Art Unit 2875

January 20, 2006
AC